

BRYOPHYTES OF MONTEVERDE, COSTA RICA

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SEVERAL COLLECTIONS OF BRYOPHYTES FROM MONTEVERDE, COSTA RICA (PUNTARENAS PROV.), HAVE BEEN COLLECTED BY MR. WALTER JAMES, HIS WIFE, MARY AND THEIR SON, JERRY OVER THE PAST EIGHT YEARS. IN ADDITION, THEY HAVE COLLECTED A LARGE NUMBER OF FERNS AND FERN-ALLIES FROM THE MOUNTAINOUS REGIONS ABOUT MONTEVERDE HAVE HAVE SENT THEM TO THE REED HERBARIUM. THESE WILL APPEAR IN ANOTHER PAPER. MONTEVERDE IS A SETTLEMENT ON THE WESTERN SLOPE OF COSTA RICA, AND NORTHWEST OF SAN JOSE. MOST OF THE SPECIMENS WERE COLLECTED FROM ELEVATIONS RANGING FROM 2500 TO 4500 FT. THE HABITATS VARY FROM DEEP FORESTS, ALONG STREAMS AND RIVERS TO EPIPHYtic AND LITHOPHYtic SITUATIONS ALONG ROADS, IN FIELDS AND IN JUNGLES.

A FEW OTHER COLLECTIONS OF BRYOPHYTES FROM COSTA RICA ARE ALSO INCLUDED. THEY INCLUDE A SMALL COLLECTION OF BRYOPHYTES FROM CLARENCE K. HORICH, WHO ALSO HAS COLLECTED MANY FERNS AND FERN-ALLIES FOR THE REED HERBARIUM; A SMALL COLLECTION FROM LUIS D. GOMEZ P. OF SAN JOSE; AND SEVERAL COLLECTIONS BY PAUL H. ALLEN, PAUL STANLEY AND J. VALERIO. THESE COLLECTIONS ARE FROM VARIOUS OTHER AREAS OF COSTA RICA.

THE BRYOPHYTES REPORTED HERE ARE REPRESENTED BY 112 SPECIES OF MOSSES AND 77 SPECIES OF LIVERWORTS. SEVERAL NEW SPECIES HAVE BEEN DESCRIBED FROM THESE COLLECTIONS. ALL SPECIMENS ARE REPRESENTED IN THE REED HERBARIUM (R), BALTIMORE, MARYLAND, AND IN THE UNITED STATES NATIONAL HERBARIUM WHERE INDICATED (US).

MUSCI

SPHAGNACEAE

SPHAGNUM CAPILLACEUM (WEISS) SCHRANK - CERRO BUVIS, RAIN PARAMO, 3000-3150 M ELEV., EPIPHYtic. 1969. GOMEZ 2124 (R).

SPHAGNUM RECURVUM P. BEAUV. - CERRO ASUNCION, 3145 M. ELEV., RAIN PARAMO. 1969. GOMEZ 2114 (R).

POLYTRICHACEAE

POGONATUM ROEUSTUM MITT. - TREELESS WINDY MOUNTAIN TOP, PAN AMERICAN HIGHWAY, NEAR HIGHEST POINT. MARCH 1963. W. JAMES (R;US).

POLYTRICHADELPHUS COSTARICENSESIS BARTR. - PAN AMERICAN HIGHWAY, S OF CARTAGO. MAY 14, 1961. W. JAMES 104 (R); CERRO BUVIS, RAIN PARAMO, 3000-3150 M, EPIPHYtic. 1969. GOMEZ 2118 (R).

POLYTRICHACEAE

POLYTRICHUM JUNIPERINUM HEDW. - MONTEVERDE, WOODS. OCT. 22, 1962. W. JAMES (R); ON ROTTEN WOOD, MONTEVERDE. JAN. 9, 1965. M. JAMES 3 (R); TREELESS WINDY MOUNTAIN TOP, PAN AMERICAN HIGHWAY, NEAR HIGHEST POINT. MAR. 1963. W. JAMES (R); BELOW VOLCANO POAS, ALT. 8000 FT. MAR. 11, 1951. WANDA PONDER 4352 (R); CERRO BUVIS, RAIN PARAMO, 3000-3150 M ELEV., EPIPHYTIC. 1969. GOMEZ 2108 (R).

FISSIDENTACEAE

FISSIDENS PRIONODES MONT. - MONTEVERDE, ON ROCK IN TRAIL TO SPRING. MAR. 10-17, 1965. W. & M. JAMES 104B (R).

FISSIDENS REPANDUS WILS. - MONTEVERDE, RIVER WOODS. MAY 1966. M. JAMES (R); ON TREES ALONG GUACIMAL RIVER, MONTEVERDE. JAN. 1968. W. JAMES 68-21 (R).

GRIMMIACEAE

RHACOMITRIUM CRISPPIPILUM (TAYL.) JAEG. - TREELESS WINDY MOUNTAIN TOP, PAN AMERICAN HIGHWAY NEAR HIGHEST POINT. MAR. 1963. W. JAMES (R; US).

FUNARIACEAE

ENTOSTHODON BONPLANDII (BRID.) MITT. - PARAMO DE MADRESELVA, 3000 M ELEV., EPIPHYTIC. 1969. GOMEZ 2107 (R).

DICRANACEAE

ATRACTYLOCARPUS COSTARICENSESIS (C. MULL.) WILLIAMS - MONTEVERDE, WOODS. FEB. 1963. W. JAMES 63B12 (R).

CAMPYLOLUS ARCTOCARPUS (HORNSTR.) MITT. - MONTEVERDE, WOODS. FEB. 1963. W. JAMES 63M9B (R).

CAMPYLOLUS CHRISMARI (C. MULL.) MITT. - TREELESS WINDY MOUNTAIN TOP, PAN AMERICAN HIGHWAY NEAR HIGHEST POINT. MAR. 1963. W. JAMES (R; US).

CAMPYLOLUS CONCOLOR (HOOK.) BRID. - MONTEVERDE, WOODS ALONG GUACIMAL RIVER. JAN. 1968. W. JAMES 68-26 (R); FORESTS, 4300 FT. ELEV., NEAR MONTEVERDE. FEB. 1969. W. JAMES 1969-30 (US).

CAMPYLOLUS FILIFOLIUS (HORNSTR.) MITT. - MONTEVERDE, FORESTS, 4300 FT. ELEV. FEB. 1969. W. JAMES 1969-16 (US).

CAMPYLOLUS FLEXUOSUS (HEDW.) BRID. - MONTEVERDE, PASTURE WOODS, MAR. 10-17, 1965. W. & M. JAMES 96; WOODS. FEB. 1963. W. JAMES 63B38 (R) AND 63B17B (R).

CAMPYLOLUS INTROFLEXUS (HEDW.) BRID. - MONTEVERDE, WOODS. OCT. 22, 1963. W. JAMES (R); PASTURES ON TREES AND LOGS. JAN. 9, 1965. M. JAMES 12 (R); JUNGLE FOREST. JUNE 1962. W. JAMES (R).

CAMPYLOLUS SAVANNARUM (C. MULL.) MITT. - MONTEVERDE, JUNGLE FOREST. JUNE 1962. W. JAMES (R).

DICRANELLA RUFESCENS (SMITH) SCHIMP. - CERRO BUVIS, RAIN PARAMO, 3000-3150 M ELEV., EPIPHYTIC. 1969. GOMEZ 2112C (R).

DICRANACEAE

DICRANELLA VAGINATA (HOOK.) CARD. - CERRO BUVIS, RAIN PARAMO, 3000-3150 M ELEV., EPIPHYTIC. 1969. GOMEZ 2112A (R); PARAMO DE MADRESELVA, 3000 M ELEV., EPIPHYTIC. 1969. GOMEZ 2110 (R).

DICRANODONTIUM MERIDIONALE BARTR. - FORESTS NEAR MONTEVERDE, 4300 FT. ELEV. FEB. 1969. W. JAMES 1969-23 (US); PROV. HEREDIA, CERROS DE ZURQUI, NE OF SAN ISIDRO, ALT. 2000-2400 M. MAR. 3, 1926. PAUL C. STANDLEY 50336 (R).

DICRANOLOMA BRITTONIAE BARTR. - MONTEVERDE, FORESTS, 4300 FT. ELEV. FEB. 1969. W. JAMES 1969-11 (US).

HOLOMITRIUM ARBOREUM MITT. - MONTEVERDE, WOODS. FEB. 1963. W. JAMES 63B31 (R).

LEUCOLOMA SERRULATUM BRID. - MONTEVERDE, PASTURE WOODS AND ALONG PATH TO SPRING. MAR. 10-17, 1965. W. & M. JAMES 37, 56, 107. (R); PASTURES ON TREES AND LOGS. JAN 9, 1965. M. JAMES 22 (R); WOODS NEAR MONTEVERDE. FEB. 1963. W. JAMES 63B17A. (R); ON TREES IN FOREST NEAR MOTAS, MONTEVERDE. APR. 4, 1969. W. JAMES 1969-101 (R); FORESTS ALONG SOUTH LINE, MONTEVERDE. MAR. 16, 1969. W. JAMES 1969-76 (US).

PILOPOGON GRACILIS (HOOK.) BRID. - TREELESS WINDY MOUNTAIN TOP, PAN AMERICAN HIGHWAY, NEAR HIGHEST POINT. MAR. 1963. W. JAMES (R); CERRO BUVIS, RAIN PARAMO, 3000-3150 M ELEV., EPIPHYTIC. 1969. GOMEZ 2113 (R); CERRO ASUNCION, 3145 M ELEV., RAIN PARAMO. 1969. GOMEZ 2119 (R).

LEUCOBRYACEAE

LEUCOBRYUM ANTILLARUM SCHIMP. EX BESCH. - MONTEVERDE, RIVER BANK. MAR. 10, 1965. W. JAMES 4 (R); JUNGLE FOREST. JUNE 1962. W. JAMES (R); WOODS. OCT. 22, 1963. W. JAMES (R); FEB. 1963. W. JAMES 63B4 (R); ON TREES, LA ESTRELLA, PROV. DE CARTAGO. MAR. 26, 1924. P.C. STANDLEY 39245 (R); WOODS ALONG GUACIMAL RIVER, MONTEVERDE. JAN 1968. W. JAMES 68-22 (R); MONTEVERDE, FORESTS, 4300 FT. ELEV. FEB. 1969. W. JAMES 1969-6 (R).

LEUCOBRYUM GIGANTEUM C.MULL. - MONTEVERDE, FORESTS. OCT. 1967. W. JAMES (R); FORESTS, 4300 FT. ELEV. FEB. 1969. W. JAMES 1969-21 (US); OCT. 22, 1963. W. JAMES (R).

CALYMPERACEAE

SYRRHOPODON INCOMPLETUS SCHWAEGR. - MONTEVERDE, ON PATH TO SPRING. MAR. 10-17, 1965. W. & M. JAMES 17 (R).

POTTIACEAE

LEPTODONTIUM EXCELSUM (SULL.) BRITT. (L. ULOCALYX (C.MULL.) MITT.) - MONTEVERDE, ALONG RIVER BANK. MAR. 10-17, 1965. W. & M. JAMES 12 (R); HEIGHTS OF LA CARPENTERA, VIC. TRES RIOS, 1300-2000 M ELEV. DEC. 1937. P.H. ALLEN (R).

BRYACEAE

ACIDODONTIUM MEGALOCARPUM (HOOK.) REN. ET CARD. - MONTEVERDE, ON RECENT CLEARING. JAN. 9, 1965. W. JAMES 6 (R).

ANOMOBRYUM FILIFORME (DICKS.) SOLMS IN RABENH. - TREELESS WINDY MOUNTAIN TOP, PAN AMERICAN HIGHWAY NEAR HIGHEST POINT. MAR. 1963. W. JAMES (R).

BRYUM CAPILLARE HEDW. - MONTEVERDE, WOODS. FEB. 1963. W. JAMES 63B16 WITH ATRACTYLOCARPUS COSTARICENSES. (R); W. JAMES 63B20 (R;US).

BRYUM TRUNCORUM (BRID.) BRID. - MONTEVERDE, JUNGLE FOREST. JUNE 1962. W. JAMES (R).

POHLIA FLEXUOSA HOOK. - CERRO BUVIS, RAIN PARAMO, 3000-3150 M ELEV., EPIPHYTIC. 1969. GOMEZ 2111 (R).

MNIACEAE

MNIUM ROSTRATUM SCHRAD., VAR. LIGULATUM HERZ. - MONTEVERDE, JUNGLE FOREST. JUNE 1962. W. JAMES (R); EPIPHYTIC ON LICHENS, LA CARPENTERA, VIC. TRES RIOS, 1300-2000 M ELEV. DEC. 1937. P.H. ALLEN (R); MONTEVERDE, RECENT CLEARING. JAN. 9, 1965. W. JAMES 9 AND 39 (R); ALONG BANK OF RIVER, MONTEVERDE. MAR. 10, 1965. W. & M. JAMES 9 (R).

RHIZOGONIACEAE

RHIZOGONIUM SPINIFORME (HEDW.) BRUCH - MONTEVERDE, ALONG RIVER BANK. MAR. 10, 1965. W. JAMES 1 AND 8 (R); MONTEVERDE, ON PATH TO SPRING. MAR. 17, 1965. M. JAMES 78 (R); MONTEVERDE, PASTURE WOODS, MAR. 17, 1965. W. JAMES 27A WITH POROTRICHIUM LONGIROSTRE. (R); ON TREES, UP LOWER LOGGING TRAIL, MONTEVERDE. DEC. 1962. W. JAMES (R); JUNGLE FOREST NEAR MONTEVERDE. JUNE 1962. W. JAMES (R); WOODS NEAR MONTEVERDE. FEB. 1963. W. JAMES 63B15 AND 63B17C (R); WOODS ALONG GUACIMAL RIVER, MONTEVERDE. JAN. 1968. W. JAMES 68-27 (R); MONTEVERDE, FORESTS, 4300 FT. ELEV. FEB. 1969. W. JAMES 1969-10 (R).

BARTRAMIACEAE

BARTRAMIA POTOSICA MONT. - TREELESS WINDY MOUNTAIN TOP, PAN AMERICAN HIGHWAY NEAR HIGHEST POINT. MAR. 1963. W. JAMES (R).

BREUTELIA DEFLEXIFOLIA CARD. - TREELESS WINDY MOUNTAIN TOP, PAN AMERICAN HIGHWAY NEAR HIGHEST POINT. MAR. 1963. W. JAMES (R;US).

BREUTELIA JAMAICENSIS (MITT.) JAEG. - MONTEVERDE, RIVER WOODS. MAY 1966. M. JAMES (R); TREELESS WINDY MOUNTAIN TOP, PAN AMERICAN HIGHWAY NEAR HIGHEST POINT. MAR. 1963. W. JAMES (R;US).

BREUTELIA SUBARCUATA (C. MULL.) SCHIMP. - TREELESS WINDY MOUNTAIN TOP, PAN AMERICAN HIGHWAY NEAR HIGHEST POINT. MAR. 1963. W. JAMES (R;US).

BREUTELIA TOMENTOSA (BRID.) SCHIMP. - TREELESS WINDY MOUNTAIN TOP, PAN AMERICAN HIGHWAY NEAR HIGHEST POINT. MAR. 1963. W. JAMES (R); PARAMO DE MADRESELVA, 3000 M ELEV., EPIPHYTIC. 1969. GOMEZ 2109 (R).

BARTRAMIACEAE

PHILONOTIS LONGISETA (MICHX.) E.G.BRITT. - CERRO BUVIS, RAIN PARAMO,
3000-3150 M ELEV., EPIPHYTIC. 1969. GOMEZ 2115 (R).

ORTHOTRICHACEAE

MACROMITRIUM CIRRHSOM (HEDW.) BRID. - MONTEVERDE, WOODS. FEB. 1963.
W.JAMES 63B44 (R); WOODS, OCT. 22, 1963. W.JAMES (R); PASTURE, ON
TREES. JAN. 15, 1965. W.JAMES 36 (R); ON TREES ALONG GUACIMAL RIVER,
MONTEVERDE. JAN. 1968. W.JAMES 68-2 (R); MONTEVERDE, FORESTS ALONG
SOUTH LINE. MAR. 16, 1969. W.JAMES 1969-79 (R) AND 1969-85 (US).

MACROMITRIUM FUSCO-AUREUM BARTR. - MONTEVERDE, CHECO TRAIL NEAR ADONO
CLEARING. AUG. 3, 1968. W.JAMES (R;US).

MACROMITRIUM LONGIFOLIUM (HOOK.) BRID. - MONTEVERDE, JUNGLE FOREST.
JUNE 1962. W.JAMES (R).

MACROMITRIUM SUBCIRRHSOM C.MULL. - MONTEVERDE, FORESTS, 4300 FT.
ELEV. FEB. 1969. W.JAMES 1969-39 (US).

GROUTIELLA APICULATA (HOOK.) CRUM & STEERE - PROV. CARTAGO, ON TREES,
1400 M ELEV., DULCE NOMBRE. FEB. 24, 1924. P.C.STANLEY (R).

GROUTIELLA WAGNERIANA (C.MULL.) CRUM & STEERE - MONTEVERDE, PASTURES,
ON TREES. JAN. 17, 1965. M.JAMES 37 (R); WOODS NEAR MONTEVERDE.
FEB. 1963. W.JAMES 63B36 (R); MONTEVERDE, FOREST ALONG SOUTH LINE.
MAR. 16, 1969. W.JAMES 1969-78 (R).

RHACOPILACEAE

RHACOPILUM TOMENTOSUM (HEDW.) BRID. - MONTEVERDE, RECENT CLEARING.
JAN. 9, 1965. W.JAMES 15B, 19B, 20 (R); ON ROCKS, MONTEVERDE. MAR.
10-17, 1965. W. & M.JAMES 104A (R); WOODS NEAR MONTEVERDE. FEB.
1963. W.JAMES 2, WITH MACROLEJEUNEA LANCIFOLIA (St.) HERZ. (R).

PRIONODONTACEAE

PRIONODON DENSUS (HEDW.) C.MULL. - MONTEVERDE, ON ROCKS IN TRAIL TO
SPRING. MAR. 10-17, 1965. W. & M.JAMES 103 (R); JUNGLE FOREST, NEAR
MONTEVERDE. JUNE 1962. W.JAMES (R); WOODS NEAR MONTEVERDE. FEB.
1963. W.JAMES 63B5, WITH SQUAMIDIUM NIGRESCENS. (R).

PRIONODON DICHTOMUS HAMPE - MONTEVERDE, ON ROCKS BY WATER. JUNE 10,
1966. M.JAMES 13 (R).

PTEROBRYACEAE

PIRELLA MARiae (CARD.) CARD. - MONTEVERDE, DEEP WOODS. JAN. 10, 1965.
M.JAMES 24A; ALONG PATH TO SPRING, MONTEVERDE. MAR. 10-17, 1965.
W. & M.JAMES 48, 57, 63 AND 82 (R); JUNGLE FOREST NEAR MONTEVERDE.
JUNE 1962. W.JAMES 3 (R); PASTURE WOODS, MONTEVERDE. MAR. 17, 1965.
W.JAMES 23, 24 AND 25 (R).

PTEROBRYACEAE

PTEROBRYON DENSUM HORN. - MONTEVERDE, WOODS. OCT. 22, 1963. W. JAMES (R); MONTEVERDE, DEEP WOODS. JAN. 10, 1965. M. JAMES 24 (R); MONTEVERDE, PASTURE WOODS ALONG PATH TO SPRING. MAR. 17, 1965. W. & M. JAMES 28 AND 59 (R); JUNGLE FOREST NEAR MONTEVERDE. JUNE 1962. W. JAMES 1 (R); WOODS NEAR MONTEVERDE. FEB. 1963. W. JAMES 63B3 (R).

METEORIACEAE

METEORIOPSIS RECURVIFOLIA (HORN.) BROTH. - ON TREES, VIC. JALACA FARM, GOLFO DULCE AREA, 100 FT. ELEV., PROV. PUNTARENAS. MAR. 25, 1949. PAUL H. ALLEN (R).

METEORIOPSIS REMOTIFOLIA (C.MULL.) BROTH. - MONTEVERDE, PASTURE WOODS AND ALONG PATH TO SPRING. MAR. 10-17, 1965. W. & M. JAMES 18 AND 64 (R); MONTEVERDE, FORESTS, 4300 FT. ELEV. FEB. 1969. W. JAMES 1969-5 (R).

PAPILLARIA DEPPEI (C.MULL.) JAEG. - MONTEVERDE, WOODS. OCT. 22, 1963. W. JAMES (R); IN PASTURES, ON TREES AND LOGS. JAN. 8, 1965. M. JAMES 8 (R); IN WOODS. FEB. 1963. W. JAMES 63B6 (R); JUNGLE FOREST NEAR MONTEVERDE. JUNE 1962. W. JAMES 7 (R).

PAPILLARIA IMPONDEROSA (TAYL.) BROTH. - CLOUD FORESTS OF MONTANA DEL CEDRAL, S OF SAN ANTONIO DE ESCAZU. JAN. 1960, ELEV. 2400 M. C.K. HORICH (R); WOODS ALONG GUACIMAL RIVER, MONTEVERDE. JAN. 1968. W. JAMES 68-25 (R); ATLANTIC RAIN FOREST AT TARPANTE, DENSE JUNGLES AT BASE OF NORTHERN CORDILLERA DE TALAMANCA ALONG UPPER HEADWATERS AREA OF Rio REVENTAZON, Rio MACHO, S OF OROSI, ELEV. 1100-1200 M., EPIPHYtic ON FERN FRONDS. DEC. 1959-JAN. 1960. C.K.HORICH (R).

PILOTRICHELLA FLEXILIS (HEDW.) AONGSTR. - MONTEVERDE, WOODS. OCT. 22, 1963. W. JAMES (R); JAN. 10, 1968, ALONG PATH TO SPRING. M. JAMES 31B (R); DEC. 1964-JAN. 1965. W. JAMES (R); JAN. 15, 1965. W. JAMES 41B (ON ORANGE AND GRAPEFRUIT LEAVES). (R); ALONG RIVER BANK NEAR MONTEVERDE. MAR. 10-17, 1965. W. JAMES 7 (R); PASTURES ON TREES AND LOGS. JAN. 9, 1965. M. JAMES 1, 2 AND 17 (R); WOODS NEAR MONTEVERDE. FEB. 1963. W. JAMES 63B19 (R); 63B25 (R;US); JUNGLE FOREST NEAR MONTEVERDE. JUNE 1962. W. JAMES 9, 11 AND 14 (R); MONTEVERDE ALONG SOUTH LINE. MAR. 16, 1969. W. JAMES 1969-75 (R); CEDRAL CREST, 2400 M ELEV., ON LEAVES OF FERNS. APR.-JUNE 1960. C.K.HORICH (R); HEIGHTS OF LA CARPENTIERA, VIC. TRES RIOS, 1300-2000 M ELEV. DEC. 1937. P.H.ALLEN (R); CLOUD FOREST BETWEEN CERRO ZURQUI AND CASAJAL, AND BETWEEN SAN GERONIMO DE MORAVIA AND THE CONTINENTAL DIVIDE OF EL ALTO DE LA PALMA, EPIPHYtic, ELEV. 1400-1550 M. NOV. 1958- JAN. 1960. C.K.HORICH (R); CLOUD FOREST OF MONTANA DEL CEDRAL, S OF SAN ANTONIO DE ESCAZU. JAN. 1960, ELEV. 2000-2440 M. C.K.HORICH (R); ON TREE, YERBA BUENA, N OF SAN ISIDRO, PROV. HEREDIA, 2000 M ELEV. FEB. 22-28, 1926. STANLEY & VALERIO (R); ON TREE, CERRO DE LAS CARICIAS, N OF SAN IRIDRO, PROV. HEREDIA, ELEV. 2000-2400 M. MAR. 11, 1926. STANLEY & VALERIO (R).

METEORIACEAE

PILOTRICHELLA PENTASTICHA (BRID.) WIJK & MARG. - MONTEVERDE, DEC. 1964-
JAN. 1965. W. JAMES (R); Oct. 1963. W. JAMES (R); ALONG PATH TO SPRING
AND IN PASTURE WOODS, MONTEVERDE. MAR. 10-17, 1965. W. JAMES 31, 49,
58 AND 60 (R); PASTURES ON TREES AND LOGS, MONTEVERDE. JAN. 9, 1965.
M. JAMES 11 (R); MONTEVERDE, FORESTS. OCT. 1967. W. JAMES (R); MONTE-
VERDE, FORESTS ALONG SOUTH LINE. MAR. 16, 1969. W. JAMES 1969-72 (R).

SQUAMIDIUM NIGRICANS (HOOK.) BROTH. - MONTEVERDE, WOODS. FEB. 1963.
W. JAMES 63B5, WITH PRIONODON DENSUS (R); JUNGLE FOREST NEAR MONTE-
VERDE. JUNE 1962. W. JAMES (R).

PHYLLOGONIACEAE

PHYLLOGONIUM FULGENS (HEDW.) BRID. - MONTEVERDE, ALONG PATH TO SPRING.
MAR. 10-17, 1965. W. & M. JAMES 79 (R); JUNGLE FOREST NEAR MONTEVERDE.
JUNE 1962. W. JAMES 12 (R); ON TREES ALONG GUACIMAL RIVER, MONTE-
VERDE. JAN. 1968. W. JAMES 68-18 (R); MONTEVERDE, FORESTS ALONG SOUTH
LINE. MAR. 16, 1969. W. JAMES 1969-103 (R).

PHYLLOGONIUM VISCOMOSUM (P.BEAUV.) MITT. - MONTEVERDE, PASTURE WOODS.
MAR. 10-17, 1965. W. & M. JAMES 36 (R); WOODS NEAR MONTEVERDE. FEB.
1962. W. JAMES 63B7 (R); JUNGLE FORESTS NEAR MONTEVERDE. JUNE 1962.
W. JAMES 8 (R).

NECKERACEAE

CALYPTOTHECİUM TURGESCENS BROTH. & THER. - MONTEVERDE, JUNGLE FOREST.
JUNE 1962. W. JAMES 5 AND 16 (R).

HOMALIA GLABELLA (HEDW.) B.S.G. - MONTEVERDE, WOODS. OCT. 22, 1963.
W. JAMES (R); JUNGLE FOREST. JUNE 1962. W. JAMES (R); ALONG RIVER
BANK NEAR MONTEVERDE. MAR. 10, 1965. W. JAMES 9 (R); SAME LOC., MAR.
17, 1965. W. JAMES 5 (R); ALONG PATH TO SPRING. MAR. 10, 1965. W.
JAMES 61 AND 75 (R); ON ROCK BY SPRING. MAR. 11, 1965. M. JAMES
16A (R); WOODS ALONG GUACIMAL RIVER, MONTEVERDE. JAN. 1968. W.
JAMES 68-28 (R).

POROTRICHUM COBANENSE C.MULL. - MONTEVERDE, ON ROCK BY SPRING. MAR.
11, 1965. M. JAMES 16 AND 101 (R); EPIPHYtic ON FERNS, SHORE AREA OF
RIO VIRILLA, NEAR LA URUCA, A SUBURE OF SAN JOSE, ELEV. 1000 M.
JAN. 1950. C.K.HORICH (R); ATLANTIC RAIN FOREST OF TAPANTI, DENSE
JUNGLES AT BASE OF NORTHERN CORDILLERA DE TACAMANCA, ALONG UPPER
HEADWATER AREA OF RIO REVENTAZON AND RIO MACHO, S OF OROSÍ, ELEV.
1100-1200 M, EPIPHYtic ON FERN FRONDS. DEC. 1959-JAN. 1960. C.K.
HORICH (R).

POROTRICHUM LONGIROSTRE (HOOK.) MITT. - MONTEVERDE, WOODS. OCT. 22,
1963. W. JAMES (R); ALONG PATH TO SPRING, MONTEVERDE. JAN. 1, 1965.
M. JAMES 32B (R); PASTURE WOODS, MONTEVERDE. MAR. 10-17, 1965. W. &
M. JAMES 29, 32, 33, 40A, 81, 99 AND 27B (R); JUNGLE FOREST NEAR
MONTEVERDE. JUNE 1962. W. JAMES (R); ALONG RIVER BANK, MONTEVERDE.
MAR. 17, 1965. W. & M. JAMES 15 (R).

NECKERACEAE

POROTRICHUM NECKERAEFORME (HAMPE) MITT. - MONTEVERDE, ON TREES IN FOREST NEAR MOTAS. APR. 4, 1969. W.JAMES 1969-90 (US).

PILOTRICHIACEAE

PILOTRICHUM ASPERIFOLIUM MITT. - MONTEVERDE, DEEP WOODS, ALONG PATH TO SPRING. JAN. 10, 1965. M.JAMES 35 (R); ON ROCKS ON TRAIL TO SPRING. MAR. 10-11, 1965. W. & M.JAMES 83 AND 97 (R); WOODS NEAR MONTEVERDE. FEB. 1963. W.JAMES 63B18, WITH OMPHALANTHUS FILIFORMIS AND 63B21 (R); JUNGLE FOREST NEAR MONTEVERDE. JUNE 1962. W.JAMES 19 (R).

PILOTRICHUM RAMOSISSIMUM MITT. - MONTEVERDE, ON TREES IN FOREST NEAR MOTAS. APR. 4, 1969. W.JAMES 1969-93 (US).

HYPOPTERYGIACEAE

HYPOPTERYGIUM TAMARISCINUM (HEOW.) BRID. - MONTEVERDE, WOODS. OCT. 22, 1963. W.JAMES (R); WOODS, MONTEVERDE. FEB. 1963. W.JAMES 63B43 (R); MONTEVERDE, ALONG PATH TO SPRING. MAR. 10, 1965. W. & M. JAMES 62 (R); RIVER WOODS NEAR MONTEVERDE. MAY 1966. M.JAMES (R).

LESKEACEAE (THUIDIACEAE)

THUIDIUM ANTILLARUM BESCH. - MONTEVERDE, RECENT CLEARING. JAN. 9, 1965. W. JAMES 23B, 15A, 21 AND 19A (R); ALONG RIVER BANK, MONTEVERDE. MAR. 10-17, 1965. W. & M.JAMES 10 AND 13 (R); ALONG PATH TO SPRING, MONTEVERDE. MAR. 10-17, 1965. W. & M.JAMES 65, 43, 41 AND 86 (R); WOODS NEAR MONTEVERDE. FEB. 1963. W.JAMES 63B20 (R); WOODS ALONG GUACIMAL RIVER, MONTEVERDE. JAN. 1968. W.JAMES 68-24.

THUIDIUM ERECTUM DUB. - MONTERDE, WOODS. FEB. 1963. W.JAMES 63B40, 63B39 AND 63B37 (R); JUNGLE FOREST NEAR MONTEVERDE. JUNE 1962. W.JAMES (R); TREELESS WINDY MOUNTAIN TOP, PAN AMERICAN HIGHWAY NEAR HIGHEST PART. MAR. 1963. W.JAMES (R); WOODS ALONG GUACIMAL RIVER, MONTEVERDE. JAN. 1968. W.JAMES 68-23 (R).

AS INDICATED IN INDEX MUSCORUM (W.M.&F., 1969) THE COMBINATION T. DELICATULUM (HEDW.) MITT. IS INVALID, BEING A LATER HOMONYM OF T. DELICATULUM (L.) B.S.G. (= T. RECOGNITUM HEDW.). THE TAXON WARRANTS MORE THAN THE VARIETAL STATUS UNDER T. RECOGNITUM GIVEN IN THE INDEX. A SEARCH INDICATES THUIDIUM ERECTUM DUB. (1878) AS THE OLDEST AVAILABLE NAME. THERE IS A SLIGHT CHANCE AN OLDER NAME WILL BE FOUND THAT IS NOT PRESENTLY RECOGNIZED AS A SYNONYM.

THUIDIUM MINUTULUM (HEDW.) B.S.G. - MONTEVERDE, PASTURE WOODS. MAR. 17, 1965. W.JAMES 20 (R); CLOUD FORESTS OF MONTANA DEL CERDAL, S OF SAN ANTONIO DE ESCAZU, ELEV. 2000-2400 M ELEV. JAN. 1960. C.K.HORICH (R); ON TREES ALONG GUACIMAL RIVER, MONTEVERDE. JAN, 1968. W. JAMES 68-17 (R).

LESKEACEAE (THUIDIACEAE)

THUIDIUM PHILIBERTII LIMPR. - MONTEVERDE, WOODS. OCT. 22, 1963. W. JAMES (R); TREELESS WINDY MOUNTAIN TOP, PAN AMERICAN HIGHWAY, NEAR HIGHEST POINT. MAR. 1963. W. JAMES (R).

BRACHYTHECIACEAE

BRACHYTHECIUM FLEXIVENTROSUM (C.MÜLL.) JAEG. - TREELESS WINDY MOUNTAIN TOP, PAN AMERICAN HIGHWAY, NEAR HIGHEST POINT. MAR. 1963. W. JAMES (R;US).

HOMALOTHECIUM LESKEOIDES (HOOK.) H. ROBINSON. (SYN.: PALAMOCLADIUM LESKEOIDES (HOOK.) E.G.BRITT.) - MONTEVERDE, WOODS. FEB. 1963. W. JAMES 63B26 (R).

RHYNCHOSTEGIUM SERRULATUM (HEDW.) JAEG. - MONTEVERDE, WOODS ALONG PATH TO SPRING. MAR. 10, 1965. W. JAMES 46B, WITH METEORIOPSIS REMOTIFOLIA. (R).

PLAGIOTHECIACEAE

PLAGIOTHECIUM DENTICULATUM (HEDW.) B.S.G. - TREELESS WINDY MOUNTAIN TOP, PAN AMERICAN HIGHWAY, NEAR HIGHEST PART. MAR. 1963. W. JAMES (R).

HOOKERIACEAE

ADELOTHECIUM BOGOTENSIS (HAMPE) MITT. - MONTEVERDE, PASTURE WOODS. MAR. 17, 1965. W. & M. JAMES 30 (R).

CALLICOSTELLA PALLIDA (HORNSTR.) JAEG. - MONTEVERDE, ALONG PATH TO SPRING. MAR. 10, 1965. W. & M. JAMES 53 AND 68 (R).

CROSSOMITRIUM PATRISIAE (BRID.) C.MÜLL. - MONTEVERDE, ON FRONDS OF BOLBITIS ALIENIA VAR., ALONG RIVER BANKS. JAN. 12, 1968. W. JAMES (R).

CYCLODICTYON ALBICANS (HEDW.) O.KUNTZE - MONTEVERDE, ON ROCKS IN TRAIL TO SPRING. MAR. 11, 1965. M. JAMES 102 (R); ON TREES ALONG GUACIMAL RIVER, MONTEVERDE. JAN. 1968. W. JAMES 68-6 (R).

CYCLODICTYON JAMESII H. ROBINSON - MONTEVERDE, FORESTS, 4300 FT. ELEV. FEB. 1969. W. JAMES 1969-44 (R;US).

HEMIRAGIS AUREA (BRID.) BESCH. (SYN.: HARPOPYLLUM AUREUM (P.BEAUV.) SPRUCE). - MONTEVERDE, JUNGLE FOREST. JUNE 1962. W. JAMES 17 (R).

HOOKERIA ACUTIFOLIA HOOK. ET GREV. - MONTEVERDE, CHECO TRAIL NEAR ADONO CLEARING. AUG. 3, 1968. W. JAMES (R;US).

HOOKERIOPSIS CRISPA (C.MÜLL.) JAEG. - MONTEVERDE, CHECO TRAIL NEAR ADONO CLEARING. AUG. 3, 1968. W. JAMES (R); CERRO VUELTAS, 3000 M ELEV., RAIN PARAMO, EPILITHIC. 1969. GOMEZ 2118 (R).

HOOKERIOPSIS FALCATA (HOOK.) JAEG. - MONTEVERDE, FORESTS, 4300 FT. ELEV. FEB. 1969. W. JAMES 1969-26 (US).

HOOKERIACEAE

HOOKERIOPSIS SUBFALCATA (HAMPE) JAEG. - MONTEVERDE, FORESTS, 4300 FT. ELEV. FEB. 1969. W. JAMES 1969-18A (US).

ISODREPANUM LENTULUM (WILS.) E.G.BRITT. - MONTEVERDE, ALONG PATH TO SPRING. MAR. 10, 1965. W. & M.JAMES 54 (R); MONTEVERDE, ALONG RIVER BANK. MAR. 17, 1965. W. & M.JAMES 3 AND 11 (R); WOODS NEAR MONTEVERDE. FEB. 1963. W. JAMES 63B33 (R); CERRO BUVIS, RAIN PARAMO, 3000-3150 M ELEV., EPIPHYTIC. 1969. GOMEZ 2112B (R).

LEPIDOPILIDIUM PORTORICENSE (C.MULL.) CRUM ET STEERE - MONTEVERDE, FOREST ALONG SOUTH LINE. MAR. 16, 1969. W.JAMES 1969-80 (US).

LEPIDOPILUM BREVICEPS MITT. - MONTEVERDE, ON ROCKS BY WATER. JUNE 10, 1966. M. JAMES 18 AND 20 (R).

LEPIDOPILUM HAPLOCLILIATUM (C.MULL.) PAR. - MONTEVERDE, ON ROCKS BY WATER. JUNE 10, 1966. M.JAMES 15 (R).

LEPIDOPILUM RADICALE MITT. - MONTEVERDE, ON TRAIL TO FIRAROLA'S. MAR. 10, 1965. W. & M.JAMES 92 (R); WOODS, MONTEVERDE. OCT. 22, 1963. W. JAMES 16 (R).

NEOHYPNELLA DIVERSIFOLIA (MITT.) WELCH ET CRUM - MONTEVERDE, FORESTS ALONG SOUTH LINE. MAR. 16, 1969. W.JAMES 1969-108 (R).

RHYNCHOSTEGIOPSIS FLEXUOSA (SULL.) C.MULL. - MONTEVERDE, ON TREES ALONG GUACIMAL RIVER. JAN. 1968. W. JAMES 68-7 AND 68-11 (R).

SEMATOPHYLLACEAE

GLOSSADELPHUS TRUNCULATUS (C.MULL.) FLEISCH. (SYN.: HYPNELLA JAMESII H.ROBINSON, BRYOLOGIST, 68: 333, f. 10-12. 1965). - MONTEVERDE, DEEP WOODS ALONG PATH TO SPRING. JAN. 10, 1965. M.JAMES 32C (HOLOTYPE OF HYPNELLA JAMESII H.ROBINSON IN US; ISOTYPE IN R).

SEMATOPHYLLUM CAESPITOSUM (HEDW.) MITT. - MONTEVERDE, ALONG PATH TO SPRING. MAR. 10, 1965. W. JAMES 45 (R); JUNGLE FOREST NEAR MONTEVERDE. JUNE 1962. W. JAMES (R).

SEMATOPHYLLUM CUSPIDATUM MITT. (MAY PROVE TO BE S. AFFINE (HORNSTR.) MITT., WHICH IS THE OLDER NAME. - MONTEVERDE, ON ROCKS BY WATER. JUNE 10, 1966. M.JAMES 17 (R).

SEMATOPHYLLUM INSULARUM (SULL.) BARTR. - MONTEVERDE, FORESTS, 4300 FT. ELEV. FEB. 1969. W. JAMES 1969-24 (R).

SEMATOPHYLLUM LINDIGII (HAMPE) MITT. - MONTEVERDE, WOODS. FEB. 1963. W. JAMES 63B1, 63B9 AND 63B34 (R).

SEMATOPHYLLUM SERICIFOLIUM MITT. - MONTEVERDE, JUNGLE FOREST. JUNE 1962. W. JAMES (R).

TAXITHELIUM PLANUM (BRID.) MITT. - MONTEVERDE, PASTURE WOODS. MAR. 10-17, 1965. W. & M.JAMES 34A (R); JUNGLE FOREST NEAR MONTEVERDE. JUNE 1962. W. JAMES (R).

HYPNACEAE

CTENIDIUM MALACODES MITT. - BRILLANTE, ON FERN RHIZOME. JULY 25, 1966.
W. JAMES (R); MONTEVERDE, FORESTS, 4300 FT. ELEV. FEB. 1969. W. JAMES 1969-27 (R;US).

ECTROPOTHECUM APICULATUM (HORNSTR.) MITT. - MONTEVERDE, RECENT CLEARING. JAN. 9, 1965. W. JAMES 13 AND 16 (R); ON ROCKS IN PASTURE, MONTEVERDE. MAR. 10, 1965. W. & M. JAMES 98 (R).

HYPNUM AMABILE (MITT.) HAMPE - CLOUD FOREST OF MONTANA DEL CEDRAL, S OF SAN ANTONIO DE ESCAZU, ELEV. 2000-2400 M. JAN. 1960. C.K. HORICH (R).

HYPNUM MIRABILE BARTR. - MONTEVERDE, PASTURES, ON TREES AND LOGS. JAN. 9, 1965. M. JAMES 5 (R).

HYPNUM POLYPTERUM (MITT.) BROTH. - MONTEVERDE, WOODS. OCT. 22, 1963. W. JAMES (R); PASTURE WOODS. MAR. 17, 1965. W. & M. JAMES 95 (R); TREELESS WINDY MOUNTAIN TOP, PAN AMERICAN HIGHWAY, NEAR HIGHEST POINT. MAR. 1963. W. JAMES (R;US); MONTEVERDE, FOREST ALONG SOUTH LINE. MAR. 16, 1969. W. JAMES 1969-86 (US) AND 1969-71 (US).

ISOPTERYGIUM DIMINUTIVUM BARTR. - MONTEVERDE, ON TREES ALONG GUACIMAL RIVER. JAN. 1968. W. JAMES 68-19 (R).

MITTENOTHAMNIUM DIMINUTIVUM (HAMPE) E.G.BRITT. - BRILLANTE. JULY 25, 1966. W. JAMES, WITH LOPHOCOLEA COLUMBICA GOTTL. (?). (R); MONTEVERDE, JUNGLE FOREST. JUNE 1962. W. JAMES (R); WOODS NEAR MONTEVERDE. FEB. 1963. W. JAMES (R); CLOUD FORESTS OF MONTANA DEL CEDRAL, S OF SAN ANTONIO DE ESCAZU, ELEV. 2000-2400 M. JAN. 1960. C.K.HORICH (R).

MITTENOTHAMNIUM LANGSDORFFII (HOOK.) CARD. - MONTEVERDE, WOODS. OCT. 22, 1963. W. JAMES (R); FEB. 1963. W. JAMES 63B41 (R); TREELESS WINDY MOUNTAIN TOP, PAN AMERICAN HIGHWAY, NEAR HIGHEST POINT. MAR. 1963. W. JAMES (R;US).

MITTENOTHAMNIUM LEHMANNII (BESCH.) CARD. - MONTEVERDE, ON ROCKS BY WATER. JUNE 10, 1966. M. JAMES 21 (R); ON TREES AND ROCKS ALONG GUACIMAL RIVER, MONTEVERDE. JAN. 1968. W. JAMES 68-1 AND 68-8 (R).

MITTENOTHAMNIUM MINUSCULIFOLIUM (C.MÜLL.) CARD. - MONTEVERDE, WOODS ALONG PATH TO SPRING. MAR. 10-17, 1965. W. & M. JAMES 2, 6, 14, 19, 22, 39, 41B, 50C, 52, 55, 53B, 73, 74 AND 87A. (R); ON TREES ALONG GUACIMAL RIVER, MONTEVERDE. JAN. 1968. W. JAMES 68-20 (R).

MITTENOTHAMNIUM REPTANS (HEDW.) CARD. - MONTEVERDE, MOUNTAIN TOP ALONG TRAIL. DEC. 29, 1964. JERRY JAMES 28 (R); DEEP WOODS ALONG PATH TO SPRING. JAN. 10, 1965. M. JAMES 32A AND 34 (R); RECENT CLEARING, MONTEVERDE. JAN. 9, 1965. W. JAMES 18 AND 23A (R).

PUIGGARIELLA AURIFOLIA (MITT.) BROTH. - MONTEVERDE, PASTURES, ON TREES AND LOGS. JAN. 9, 1965. M. JAMES 12 (R); SAME LOC., DEC. 1964. W. JAMES 4 (R).

HEPATICAE

ANTHOCEROTACEAE

DENDROCEROS CRISTATUS (HOOK.) NEES - MONTEVERDE, ON TREE IN YARD.
JUNE 14, 1966. M. JAMES 3 (R). DET. PROSKAUER.

HERBERTACEAE

HERBERTA PENSILIS (T.TAYLOR) SPRUCE - MONTEVERDE, CHECO TRAIL NEAR
ADONO CLEARING. AUG. 3, 1968. W. JAMES (R); MONTEVERDE, FORESTS,
4300 FT. ELEV. FEB. 1969. W. JAMES 1969-14 (US).

LEPICOLEACEAE

LEPICOLEA PRUINOSA (T.TAYLOR) SPRUCE - MONTEVERDE, CHECO TRAIL NEAR
ADONO CLEARING. AUG. 3, 1968. W. JAMES (R).

TRICHOCOLEACEAE

TRICHOCOLEA FLACCIDA (SPRUCE) JACK ET STEPH. - MONTEVERDE, FORESTS,
4300 FT. ELEV. FEB. 1969. W. JAMES 1969-1 (R).

TRICHOCOLEA TOMENTOSA (SWARTZ) GOTTSCHE - MONTEVERDE, CHECO TRAIL
NEAR ADONO CLEARING. AUG. 3, 1968. W. JAMES (R); MONTEVERDE, FOR-
EST ALONG SOUTH LINE. MAR. 16, 1969. W. JAMES 1969-109 (R).

LEPIDOZIACEAE

BAZZANIA BREUTELIANA (LINDENB. ET GOTT.) TREVIS. - MONTEVERDE, MOUN-
TAIN TOP ALONG TRAIL. DEC. 29, 1964. JERRY JAMES 27 (R); MONTE-
VERDE, FORESTS, 4300 FT. ELEV. FEB. 1969. W. JAMES 1969-28 (R).

BAZZANIA DENTICULATA (LINDENB. ET GOTT.) TREVIS. - MONTEVERDE, FOR-
ESTS, 4300 FT. ELEV. FEB. 1969. W. JAMES 1969-33B AND 1969-34 (R).

BAZZANIA HOOKERI (LINDENB.) TREVIS. - MONTEVERDE, FORESTS, 4300 FT.
ELEV. FEB. 1969. W. JAMES 1969-32 (US).

BAZZANIA RORAIMENSIS (STEPH.) FULFORD - MONTEVERDE, FORESTS, 4300 FT.
ELEV. FEB. 1969. W. JAMES 1969-29 (R).

BAZZANIA STOLONIFERA (SWARTZ) TREVIS. - MONTEVERDE, FORESTS, 4300 FT.
ELEV. FEB. 1969. W. JAMES 1969-8 AND 1969-25 (R).

LEPIDOZIA ARMATA STEPH. - MONTEVERDE, CHECO TRAIL NEAR ADONO CLEARING.
AUG. 3, 1968. W. JAMES (R); MONTEVERDE, FORESTS, 4300 FT. ELEV.
FEB. 1969. W. JAMES 1969-31 AND 1969-107 (R); CERRO VUELTAS, 3000
M ELEV., RAIN PARAMO, EPILITHIC. 1969. GOMEZ 2117 (R).

LEPIDOZIA BRASILIENSIS STEPH. - MONTEVERDE, FORESTS, 4300 FT. ELEV.
FEB. 1969. W. JAMES 1969-33A (US).

LEPIDOZIA PATENS LINDENB. - MONTEVERDE, FORESTS, 4300 FT. ELEV. FEB.
1969. W. JAMES 1969-12 (US).

ACROBOLACEAE

TYLIMANTHUS JAMAICENSIS STEPH. - MONTEVERDE, FORESTS, 4300 FT. ELEV.
Feb. 1969. W. JAMES 1969-36 (US).

LOPHOCOLEACEAE

CHILOSCYPHUS COMBINATUS (NEES) NEES - MONTEVERDE, CHECO TRAIL NEAR
ADONO CLEARING. AUG. 3, 1968. W. JAMES (R; US).

LEPTOSCYPHUS LIEBMANNIANUS (LINDENB. ET GOTTS.) MITT. - MONTEVERDE,
FOREST ALONG SOUTH LINE. MAR. 16, 1969. W. JAMES 1969-11 (R);
BRILLANTE, ON FERN RHIZOME. JULY 25, 1966. W. JAMES (R).

LOPHOCOLEA COLUMBICA GOTTSCHE - BRILLANTE. JULY 25, 1966. W. JAMES (R).

LOPHOCOLEA MARTIANA NEES - MONTEVERDE. MAR. 10-17, 1965. W. & M. JAMES
76, 77, 87B (R).

LOPHOCOLEA MURICATA (LEHM.) NEES - MONTEVERDE. MAR. 10-17, 1965.
W. & M. JAMES 50B (R).

SCAPANIACEAE

SCAPANIA PORTORICENSIS HAMPE ET GOTTSCHE - BRILLANTE. JULY 25, 1966.
W. JAMES (R); MONTEVERDE, FORESTS, 4300 FT. ELEV. FEB. 1969. W.
JAMES 1969-7 (US).

CEPHALOZIACEAE

CEPHALOZIA CARIBBEANIA FULFORD - MONTEVERDE, FORESTS, 4300 FT. ELEV.
FEB. 1969. W. JAMES 1969-2 (US).

ODONTOSCHISMA LONGIFLORUM (TAYLOR) STEPH. - MONTEVERDE, FORESTS,
4300 FT. ELEV. FEB. 1969. W. JAMES 1969-19A (US).

PLAGIOCHILACEAE

PLAGIOCHILA ACANTHODA LINDENB. ET GOTTSCHE - MONTEVERDE, MAR. 10-17,
1965. W. & M. JAMES 70 (R).

PLAGIOCHILA BURSATA (Desv.) LINDENB. - BRILLANTE, ON FERN RHIZOMES.
JULY 25, 1966. W. JAMES (R); MONTEVERDE, CHECO TRAIL NEAR ADONO
CLEARING. AUG. 3, 1968. W. JAMES (R); MONTEVERDE, FORESTS, 4300
FT. ELEV. FEB. 1969. W. JAMES 1969-22 (R).

PLAGIOCHILA CHIANTLANA GOTTSCHE - MONTEVERDE, ON ROCKS BY WATER.
JUNE 10, 1966. M. JAMES 14 (R).

PLAGIOCHILA CONTINGENS GOTTSCHE - MONTEVERDE, CHECO TRAIL NEAR ADONO
CLEARING. AUG. 3, 1968. W. JAMES (R); MONTEVERDE, ON TREES IN
FOREST NEAR MOTAS. APR. 4, 1969. W. JAMES 1969-94 (MALE, US)
AND 1969-89 (FEMALE, US).

PLAGIOCHILA CRISTATA (Sw.) DUM. - MONTEVERDE, MAR. 10-17, 1965.
W. & M. JAMES 26 AND 35 (R); MONTEVERDE, CHECO TRAIL NEAR ADONO
CLEARING. AUG. 3, 1968. W. JAMES (R); MONTEVERDE, FORESTS ALONG
SOUTH LINE. MAR. 16, 1969. W. JAMES 1969-110 (R).

PLAGIOCHILACEAE

PLAGIOCHILA DEMISSA GOTTSCHE - MONTEVERDE. MAR. 10-17, 1965. W. &
M. JAMES 42A (R).

PLAGIOCHILA LUDOVICIANA SULL. - MONTEVERDE. MAR. 10-17, 1965. W. &
M. JAMES 38, 40B AND 89 (WITH RADULA COMPLANATA) (R).

PLAGIOCHILA ORESITROPHA SPRUCE - MONTEVERDE, RIVER WOODS. MAY 1966.
M. JAMES (R).

PLAGIOCHILA RUTILANS LINDB. - MONTEVERDE. MAR. 10-17, 1965. W. &
M. JAMES 80 (R); MONTEVERDE, FORESTS, 4300 FT. ELEV. FEB. 1969.
W. JAMES 1969-4 (R).

PLAGIOCHILA STANLEYI HERZ. - MONTEVERDE, RIVER WOODS. MAY 1966.
M. JAMES (R).

PLAGIOCHILA VERRUCULOSA SCHUSTER - MONTEVERDE, FORESTS, 4300 FT.
ELEV. FEB. 1969. W. JAMES 1969-18B AND 1969-9 (R;US).

RADULACEAE

RADULA COMPLANATA (L.) DUM. - MONTEVERDE, PASTURES, ON TREES AND
LOGS. JAN. 9, 1965. M. JAMES 7 (R); MONTEVERDE. MAR. 10-17, 1965.
W. & M. JAMES 47, 77 (WITH LOPHOCOLEA MARTIANA), 89 (R).

RADULA ELEGANS STEPH. - MONTEVERDE, FORESTS. OCT. 1967. W. JAMES
(R;US).

PORELLACEAE

PORELLA LIEBMANNIANA (LINDB. ET GOTTSCHE) TREVIS. - MONTEVERDE.
MAR. 10-17, 1965. W. & M. JAMES 71 (R).

PORELLA SWARTZIANA (WEB.) TREVIS. - MONTEVERDE. MAR. 10-17, 1965.
W. & M. JAMES 42B AND 72 (R); MONTEVERDE, FOREST ALONG SOUTH LINE.
MAR. 16, 1969. W. JAMES 1969-83 (R).

FRULLANIACEAE

FRULLANIA ARECAE (SPRENG.) SPRUCE - MONTEVERDE. OCT. 1963. W. JAMES
14 (R); MONTEVERDE, FORESTS. MAR. 10-17, 1965. W. & M. JAMES 88,
105, WITH EUOSMOLEJEUNEA DURIUSCULA. (R).

FRULLANIA ATRATA NEES - MONTEVERDE. OCT. 1963. W. JAMES 17 (R).

FRULLANIA BRASILIENSIS RADDI - MONTEVERDE. OCT. 1963. W. JAMES 15 (R).
FRULLANIA CUCULLATA LINDB. ET GOTTSCHE - MONTEVERDE, FORESTS, 4300
FT. ELEV. FEB. 1969. W. JAMES 1969-17 (R).

FRULLANIA MIRABILIS JACK ET STEPH. - MONTEVERDE. MAR. 10-17, 1965.
W. & M. JAMES 106 (R).

FRULLANIA OSCULATIANA DeNOT. - MONTEVERDE, ON TREES, FOREST NEAR
MOTAS. APR. 4, 1969. W. JAMES 1969-91 (R;US).

LEJEUNEACEAE

ARCHILEJEUNEA LEPRIEURII (MONT.) SPRUCE - MONTEVERDE. MAR. 10-17, 1965. W. & M. JAMES 100 (R).

BRYOPTERIS FRUTICOLOSA TAYL. - MONTEVERDE, MOUNTAIN TOP ALONG TRAIL. DEC. 29, 1964. JERRY JAMES 28 (R) AND 33 (US); MONTEVERDE, WOODS. FEB. 1963. W. JAMES (US).

BRYOPTERIS TRINITENSIS (LEHM. & LINDENB.) LEHM. ET LINDENB. - MONTEVERDE, ON ROCKS BY WATER. JUNE 10, 1966. M. JAMES 16 (R).

CERATOLEJEUNEA MARITIMA (SPRUCE) STEPH. - MONTEVERDE, FORESTS, 4300 FT. ELEV. FEB. 1969. W. JAMES 1969-13 (R).

CERATOLEJEUNEA CORNUTA (LINDENB.) SCHIFFN. - MONTEVERDE, ON LEAVES OF ORANGE AND GRAPEFRUIT. JAN. 15, 1965. W. JAMES 40E (R); ALONG PATH TO SPRING, MONTEVERDE. JAN. 10, 1965. M. JAMES 31A (R).

COLOLEJEUNEA SCABRIFLORA GOTTSCHE EX STEPH. - MONTEVERDE, ON LEAVES OF ORANGE AND GRAPEFRUIT. JAN. 15, 1965. W. JAMES 41A (R).

COLURA TENUICORNIS (EVANS) STEPH. - MONTEVERDE, ON LEAVES OF ORANGE AND GRAPEFRUIT. JAN. 15, 1965. W. JAMES 40F (R).

DIPLASIOLEJEUNEA BRACHYGLADA EVANS - MONTEVERDE, ON LEAVES OF ORANGE AND GRAPEFRUIT. JAN. 15, 1965. W. JAMES 40C, 40H, 41C (R).

DREPANOLOLEJEUNEA BIOCCELLATA EVANS - MONTEVERDE, ON LEAVES OF ORANGE AND GRAPEFRUIT. JAN. 15, 1965. W. JAMES 40I AND 41A (R).

EUOSMOLEJEUNEA CLAUSA (NEES ET MONT.) EVANS - MONTEVERDE, ON LEAVES OF ORANGE AND GRAPEFRUIT. JAN. 15, 1965. W. JAMES 41D (R); MONTEVERDE, FORESTS ALONG SOUTH LINE. MAR. 16, 1969. W. JAMES 1969-102 (R).

EUOSMOLEJEUNEA DURIUSCULA (NEES) EVANS - MONTEVERDE. MAR. 10-17, 1965. W. & M. JAMES 105, WITH FRULLANIA ARECAE (R).

HYGROLEJEUNEA CERINA (LEHM. ET LINDENB.) STEPH. - MONTEVERDE, PASTURES, ON TREES AND LOGS. JAN. 9, 1965. W. JAMES 10 (R).

HYGROLEJEUNEA PUNCTATA HERZ. - MONTEVERDE. MAR. 10-17, 1965. W. & M. JAMES 76, WITH LOPHOCOLEA MARTIANA (R).

LEUCOLEJEUNEA XANTHOCARPA (LEHM. ET LINDENB.) EVANS - MONTEVERDE, OCT. 1963. W. JAMES 13 (R).

MACROLEJEUNEA LANCIFOLIA (STEPH.) HERZ. - MONTEVERDE, PASTURES, ON TREES AND LOGS. JAN. 9, 1965. M. JAMES 14 (R).

NOWELLIA REEDII H. ROBINSON - MONTEVERDE, FORESTS, 4300 FT. ELEV. FEB. 1969. W. JAMES 1969-42 (HOLOTYPE: US; ISOTYPE: REED).

ODONTOLEJEUNEA LUNULATA (WEB.) SCHIFFN. - MONTEVERDE, ON LEAVES OF ORANGE AND GRAPEFRUIT. JAN. 15, 1965. W. JAMES 40A (R).

OMPHALANTHUS FILIFORMIS (SW.) NEES - MONTEVERDE, FOREST ALONG SOUTH LINE. MAR. 16, 1969. W. JAMES 1969-67 AND 1969-73 (R); MONTEVERDE, MOUNTAIN TOP ALONG TRAIL. DEC. 29, 1964. JERRY JAMES 30 (R); MONTEVERDE. OCT. 1963. W. JAMES 9 (R).

LEJEUNEACEAE

PELTOLEJEUNEA OVALIS (LINDENB. ET GOTTSCHE) SPRUCE - MONTEVERDE, ON LEAVES OF ORANGE AND GRAPEFRUIT. JAN. 15, 1965. W. JAMES 400 (R).

PRIONOLEJEUNEA MUCRONATA (LAC.) STEPH. - MONTEVERDE. MAR. 10-17, 1965. W. & M. JAMES 34B, 50A, 69, 108 (ON PILOTRICHELLA IMBRICATA) (R); ALONG PATH TO SPRING, MONTEVERDE. JAN. 10, 1965. M. JAMES 34 (R).

RECTOLEJEUNEA MAXONII EVANS - MONTEVERDE, ON LEAVES OF ORANGE AND GRAPEFRUIT. JAN. 15, 1965. W. JAMES 41B(1), 41A AND 41E (R).

STICTOLEJEUNEA KUNZEANA (GOTTSCHE) SCHIFFN. - MONTEVERDE, FOREST ALONG SOUTH LINE. MAR. 16, 1969. W. JAMES 1969-66 (US).

STICTOLEJEUNEA SQUAMATA (WILLD.) SCHIFFN. - MONTEVERDE, WOODS. OCT. 1967. W. JAMES (R; US).

TAXILEJEUNEA OBTUSANGULA (SPRUCE) EVANS - MONTEVERDE, ON LEAVES OF ORANGE AND GRAPEFRUIT. JAN. 15, 1965. W. JAMES 40G AND 41A (R).

TAXILEJEUNEA PTEROGONIA (LEHM. ET LINDENB.) STEPH. - MONTEVERDE, UNDER EAVES OF GREENHOUSE. JAN. 11, 1965. M. JAMES 29 (R); MONTEVERDE, FOREST ALONG SOUTH LINE. MAR. 16, 1969. W. JAMES 1969-70.

TRACHYLEJEUNEA INFLEXA (HAMPE) STEPH. - MONTEVERDE, ON TREES IN FOREST NEAR MOTAS. APR. 4, 1969. W. JAMES 1969-100 (R).

DILAENACEAE

SYMPHYOGYNA BRONGNIARTII MONT. - MONTEVERDE, ROAD BANK. MAY 29, 1966. W. JAMES 27 (R).

METZGERIACEAE

METZGERIA CONJUGATA LINDENB. - MONTEVERDE. OCT. 1963. W. JAMES 7 (R); MONTEVERDE, FORESTS, 4300 FT. ELEV. FEB. 1969. W. JAMES 1969-15.

METZGERIA FRUTICULOSA (DICKS.) EVANS - MONTEVERDE, ON LEAVES OF ORANGE AND GRAPEFRUIT. JAN. 15, 1965. W. JAMES 40B(2) (R).

METZGERIA HAMATA LINDB. - MONTEVERDE, CHECO TRAIL NEAR ADONO CLEARING. AUG. 3, 1968. W. JAMES (R); MONTEVERDE, FORESTS, 4300 FT. ELEV. FEB. 1969. W. JAMES 1969-19B (R).

ANEURACEAE

RICCIARDIA MULTIFIDA (L.) S.F.GRAY - MONTEVERDE, FORESTS, 4300 FT. ELEV. FEB. 1969. W. JAMES 1969-3 (R).

MONOCLEACEAE

MONOCLEA GOTTSCHII LINDB. - MONTEVERDE, ON TREE, RIVER WOODS. JUNE 7, 1966. M. JAMES 9 (R).

MARCHANTIACEAE

DUMORTIERA HIRSUTA (Sw.) NEES - MONTEVERDE, EATONS PATH, RIVER CLIFF, 4500 FT. ELEV. MAR. 9, 1969. W. JAMES 1969-88 (R).

MARCHANTIA CHENOPODA L. - MONTEVERDE, ROAD BANK. MAY 29, 1966. W. JAMES 23, 24, 25, 26 (R); ON GROUND ALONG RIVER, WOODS, MONTEVERDE. JUNE 7, 1966. M. JAMES 7 (R); ON PASTURE LOG, MONTEVERDE. JUNE 13, 1966. M. JAMES 2 (R).